

Abstract for FINSysB Conference

Candida Infection Biology – fungal armoury, battlefields and host defences

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Insights into *Candida tropicalis* virulence factors

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Candida tropicalis is a common nosocomial species related to candidemia and candiduria. Several virulence factors seem to be responsible for *C. tropicalis* infections, which lead to high mortality. Adhesion to surfaces (medical devices and host cells) and biofilm formation are considered important factors that contribute to the development of candidosis. Therefore, adhesion to urinary catheters and biofilm formation were assessed in an optimized *in vitro* flow model, using silicone and latex urinary catheters and artificial urine (AU). Moreover, biofilm matrices were also evaluated in terms of proteins and carbohydrates. Regarding adhesion to biotic surfaces, the interaction of *C. tropicalis* with host cells was determined using three different human epithelial cell lines: TCC-SUP (urinary bladder); HeLa (cervical carcinoma) and Caco-2 (colorectal adenocarcinoma). Specifically, the degree of human cells damage and activity reduction induced by *C. tropicalis* adhesion and the role of *Candida tropicalis* aspartyl proteinases (*SAPT*) genes expression were assessed. Additionally, the influence of *C. tropicalis* biofilm cells with different ages (24 - 120 h) on TCC-SUP cells integrity was also studied. Another important *Candida* factor is its resistance to antifungal agents, which was also assessed and related with the expression of enzymes and hyphae formation.

In summary, *C. tropicalis* strains were able to form biofilms in AU, in static or dynamic mode, although, with differences among strains. It is important to emphasize that human cells response to *C. tropicalis* adhesion, as well as *SAPs* production, is strain and cell line dependent. Additionally, it should be highlighted that *C. tropicalis* cells detached from biofilms are able to colonize human cells and cause injury and reduction of metabolic activity. In addition *SAPT3* was highly expressed compared to other *SAPT* genes. Therefore, it should be pointed out that *C. tropicalis* presented a set of different virulence factors that might be responsible for its high degree of infection.